The patient was referred to the paediatric anaesthetic/allergy clinic because of a reaction he experienced after dental filling under local anaesthesia. Within half an hour he developed generalized urticaria and facial angioedema. His symptoms responded to oral chlorphenamine. Possible allergic triggers included preservative-free mepivacaine 3%, Hypocal® non-setting calcium hydroxide, Unodont®, latex gloves, and chlorhexidine. He had not received any antibiotics or analgesics and was previously well with no atopic predisposition or co-morbidities.

Skin prick testing demonstrated a 5 mm wheal to preservative-free mepivacaine 0.3%, but was negative to latex, chlorhexidine 0.5%, bupivacaine 0.5%, and lidocaine 1%. The patient then underwent provocation testing with subcutaneous injections of 0.01, 0.1 and 0.5 ml of the undiluted solution of mepivacaine at 15 min intervals. Fifteen minutes after the last dose, the patient developed a wheal measuring 30 × 40 mm at the injection site (Fig. 1), followed by generalized urticaria, facial angioedema, cough and dyspnoea although there was no bronchospasm. His oxygen saturations remained at 100% in air.

The symptoms subsided with oral loratadine and inhaled salbutamol. A diagnosis of mepivacaine allergy was made. Lidocaine or bupivacaine was recommended as safe alternatives for future local anaesthetics.

Gall and colleagues investigated 43 adults with suspected mepivacaine allergy over a 10 yr period using a schedule of prick, intradermal, and challenge testing and confirmed an allergy in only one of these patients. Bhole and colleagues found that intradermal testing has a higher false-positive rate (37/2648—1.4%) compared with challenge tests (19/2560—0.74%) and thus the latter was recommended to confirm the diagnosis.

Most reactions to local anaesthetics in dental surgery result from autonomic activation, either vaso-vagal attacks or the consequence of inadvertent intravascular co-administration of an alpha-adrenergic vasoconstrictor agent. Reactions to preservatives, for example methyl and propylparabens, have also been described. Immediate, IgE-mediated reactions are rare but important to exclude because the risk of anaphylaxis on re-exposure. Cross-sensitivity between amide local anaesthetics has been reported. As skin prick testing with local anaesthetic agents has a high negative predictive value of ~97%, we were confident that a negative prick test with lidocaine and bupivacaine effectively excluded cross-reactivity and the patient could receive these drugs safely in the future.

In summary, many patients are incorrectly labelled with the diagnosis of local anaesthetic allergy. If a positive skin prick test reaction is found, a drug provocation test should be performed to confirm allergy. Diagnostic clarity and identification of safe, alternative drugs allow the individual to continue to receive the benefits of local anaesthetic agents.

### Declaration of interest
None declared.

V. Sharma*  
N. J. N. Harper  
T. Garcez  
P. D. Arkwright  
Manchester, UK  
*E-mail: vibha.sharma@nhs.net


doi:10.1093/bja/aet147

### Reducing system errors in the preoperative assessment process

Editor—A thorough evaluation of patients before operation is vital. It reduces late surgical cancellations but if inadequate may be associated with perioperative complications. As patients become older and sicker, preoperative assessment is an increasingly complex activity requiring input from multiple hospital staff. With complexity comes the increased risk of error.

A system of checklists applied in a similarly complex environment, the operating theatre, can significantly affect patient outcomes. The implementation of the WHO safe-surgery checklist in eight hospitals around the world reduced mortality by nearly 50% and inpatient complications by 36%. A similar approach may be of benefit in the pre-operative assessment process.
Our hospital runs a multi-disciplinary outpatient clinic which allows patient assessment and preparation before elective surgery. During the clinic, the patient completes a structured self-assessment questionnaire and then consults with a range of healthcare providers. A 55-year-old man presented for evaluation before undergoing bilateral inguinal herniorrhaphies. He completed the self-assessment questionnaire and was then seen and evaluated by nursing staff, a junior doctor from the surgical team, a senior anaesthetist, and a pharmacist.

He was noted to be a difficult historian by those who interacted with him on the day. He reported multiple low-grade food and drug intolerances in addition to a range of disparate and mild somatic complaints. The anaesthetist noted that there was no significant medical history. His physical examination was unremarkable apart from obesity (body mass index=32). His medical record was available at the time of his assessment.

He presented to the hospital on the operative day and was briefly re-assessed by his procedural anaesthetist. Routine monitoring was applied; his pre-induction blood pressure was recorded as 118/70 mm Hg. After pre-oxygenation, he received a standard induction and was intubated without event. Shortly after induction he experienced a 30-min episode of clinically important hypotension with systolic blood pressures of 60–80 mm Hg. He was also noted to be bradycardic with a heart rate of 35–45 beats min⁻¹. These unfavourable haemodynamics were eventually corrected with repeated boluses of fluid, metaraminol, ephedrine and glycopyrrolate. There were no other features of anaphylaxis. The case proceeded without event, his recovery was uneventful, and the patient was discharged on Day 2.

On further review of the clinical record in theatre, the anaesthetist noted that the patient had a long-standing history of severe hypothyroidism [T4≤5 pmol litre⁻¹ (ref: 10–25), TSH=100 mU litre⁻¹ (ref: 0.5–4)] but was non-compliant with his medication. Of significance, he had indicated on his preoperative self-assessment questionnaire that he had thyroid disease in response to a specific written question. If this important piece of clinical information had been identified before operation, it could have been factored into the anaesthetic plan and treatment of the subsequent intraoperative haemodynamic disturbance.

In our current system, no process exists to ensure that preoperative self-assessment questionnaire responses are followed up. Further, consultations with clinicians are loosely structured, and information gathered depends heavily on the individual clinician’s style of questioning. In this case, a structured approach may have increased the probability of this uncommon and unexpected medical issue being acknowledged before operation. Of interest, the patient was noted to be a difficult historian, possibly exacerbated by his hypothyroidism, yet had volunteered information on his thyroid condition on direct (written) questioning.

The task of preoperative assessment is both increasingly complex and vulnerable to clinical variance or error. However, advances in information technology mean that the structured, systematic collection of relevant clinical information before operation is feasible. Important issues can be automatically flagged and drawn to the attention of clinic staff. The development of checklists for application in the operating theatre has proved beneficial to patient outcome. A similar approach to the collection and processing of preoperative information is feasible and could also lead to outcome improvements.

T. Painter*
G. L. Ludbrook
Adelaide, Australia

*E-mail: thomas.painter@health.sa.gov.au

2 Kluger MT, Bullock MF. Recovery room incidents: a review of 419 reports from the Anaesthetic Incident Monitoring Study (AIMS). Anaesthesia 2002; 57: 1060–6
doi:10.1093/bja/aet148

Anaesthetic management of a patient with Charcot-Marie-Tooth disease for staged diaphragmatic plication

Editor—A 52-yr-old female with a 30 yr history of Charcot-Marie-Tooth (CMT) disease presented for a right thoracotomy and diaphragmatic plication. She suffered severe dyspnoea at rest. She was wheelchair dependent, could not lie flat, and was using home oxygen for increased periods.

Chest radiograph revealed bilaterally raised hemidiaphragms and pulmonary function tests demonstrated a severe restrictive defect (Table 1).

Induction and maintenance of anaesthesia was achieved with remifentanil and propofol infusions with incremental boluses of vecuronium. A double-lumen tube was sited, and pressure-controlled ventilation was used. After routine unilateral plication, the patient was reversed with sugammadex and extubated.

For postoperative analgesia, epipleural and wound catheters with plain 0.25% bupivacaine were used together with low-dose remifentanil infusion and regular paracetamol.

After the operation, the patient developed worsening type 2 respiratory failure treated with non-invasive ventilation during the first postoperative night, resolving the following day. The patient was discharged from hospital on the sixth postoperative day.